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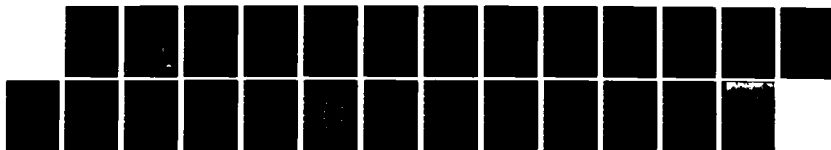
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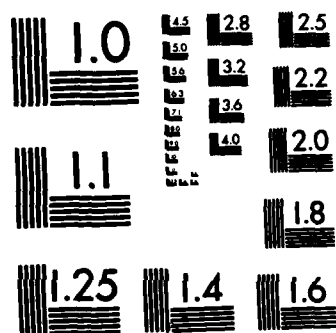
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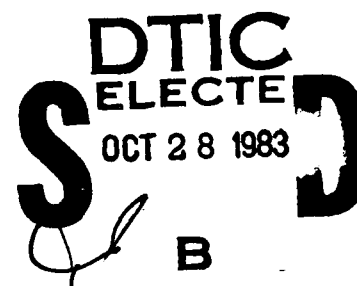
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HUMAN AND ORGANIZATIONAL EFFECTIVENESS: A TOTAL SPECTRUM MODEL

Grant E. Secrist, Lieutenant Colonel, USAF



September 1983

Final Report for Period December 1980 - December 1981

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USAF SCHOOL OF AEROSPACE MEDICINE
Aerospace Medical Division (AFSC)
Brooks Air Force Base, Texas 78235



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The Office of Public Affairs has reviewed this report, and it is releasable to the National Technical Information Service, where it will be available to the general public, including foreign nations.

This report has been reviewed and is approved for publication.

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provide a framework to guide organizational research and the development of advanced multidimensional assessment tools.

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HUMAN AND ORGANIZATIONAL EFFECTIVENESS: A TOTAL SPECTRUM MODEL

A foremost need in the study of organizational behavior is the development of comprehensive, refined models of human and organizational effectiveness. These models are required to guide the conduct and interpretation of organizational research, aid in defining and classifying variables, illustrate the nature and magnitude of relationships, and postulate and confirm cause and effect.

The purpose of this report is to provide a historical perspective on work to develop models of organizational behavior, assess the significance and dimensionality of the emerging concept of organizational climate, and explore efforts to develop advanced, comprehensive models of human behavior in work organizations; also, to present a new theoretical-conceptual model that integrates and extends previous work. This model, termed the total spectrum model of human and organizational effectiveness, is intended to approximate the level of complexity found in contemporary organizations.

HISTORICAL PERSPECTIVE

Over three decades have passed since Lewin (1951) articulated his field theory of human and environment interaction. He used terms such as "climate" and "atmosphere" to describe the functional relationship between persons and their environments. Lewin's theory and research support the notion that an organization's environment has an important influence on human performance, commitment, and satisfaction; a phenomenon first detected during the well-known Hawthorne studies (Roethlisberger and Dickson 1939).

Several basic, generally accepted postulates of human behavior are especially applicable to man's organizational behavior. Sells (1963) has discussed these fundamental principles of human behavior in some detail. Briefly, three major postulates provide a necessary foundation for understanding human behavior in organizations.

1. Human behavior is determined by the lawful consequences of antecedent events.
2. Multiple determinism is applicable to nearly all human behavior. Both stimuli and human response are complex, multidimensional, and involve patterned, sequential interaction.
3. Human behavior is predominantly the result of multidimensional mediated transactions between the individual and his environment.

A paramount problem for behavioral scientists over the past 30 years, and a continuing challenge for contemporary organizational scientists, concerns the identification and measurement of significant environmental determinants of behavior. Sophisticated research paradigms are required for the study of organizational behavior. As Schein (1965) pointed out, organizational research deals with multiple causative factors in a field of simultaneously acting forces. To provide a framework for shaping and interpreting such research, comprehensive, multivariate theoretical-conceptual models of human organizational behavior are needed. Equally important is the requirement for multidimensional taxonomies to catalog environmental factors that influence human and organizational effectiveness.

Since Lewin's (1951) expression of behavior as a function of interaction between person and environment, $B = f(P, E)$, models of human organizational behavior have become increasingly differentiated. These models have typically concentrated on explaining one of three general types of behavioral criteria: (a) performance, (b) job or need satisfaction, and (c) motivation. Some of the models also suggested, either implicitly or explicitly, taxonomies for categorizing important organizational variables.

Table 1 gives some examples of the evolution of theoretical-conceptual models of organizational behavior. The principal criteria, primary components, and reference sources are provided for each model. The most striking evolutionary feature evident from the chronology depicted in Table 1 is the increasing complexity of the models.

CONCEPT OF ORGANIZATIONAL CLIMATE

The concept of organizational climate has attained an ascendant position in organizational research. Organizational climate appears to be a potent intervening force between the individual and the objective physical and organizational environments of the work setting. Thus, the concept of climate is central to the development of models of organizational behavior.

Organizational climate refers to the perceived milieu or atmosphere created within a work setting as a result of the combined interactive effects of leader behavior, management practices, job/task properties, and a wide variety of organizational and environmental factors. These conditions appear to yield replicable dimensions of influence within organizations, which shape individual behavior. It is precisely this situation and its consequences that have given the rise to organizational climate research.

Individual perceptions are especially crucial to understanding organizational behavior. People react primarily to cognitive representations of the subjective world rather than the situation per se of the objective world (Endler and Magnusson 1976, James et al. 1978, Mahoney 1977, Stotland and Canon 1972). Thus, it is important to systematically investigate and quantify environmental perceptions so that the critical dimensions of organizational climate might be identified and understood.

Schneider (1975) has traced the theoretical origin of the concept of organizational climate beyond Lewin's (1951) field theory to the early schools

of Gestalt psychology and of functionalism. The Gestalt theories pertaining to the apprehension and creation of order and the organization of perceptions as a basis for appropriate behavior comprise a major aspect of the climate construct. The functionalist ideas regarding adaptation to the environment and the development of a coherent set of behaviors for each perceptual frame of reference furnish another principal construct. Other formative theoretical-conceptual contributions to the concept of organization climate were the notions of psychological climate (McGregor 1960), company personality (Gellerman 1960), organizational culture (Argyris 1958), and organizational climate as defined by Forehand and Gilmer (1964) and Gilmer (1966).

Kahn alluded to the concept of organizational climate in his treatment of organizational stress problems (Kahn et al. 1964). He referred to climate as the sum of conditions that determine what things shall grow and what shall be blighted in an organization. A similar interpretation of organizational climate is found in Rucker's (1967) research. He described climate as the summation of management's attitudes, sentiments, and work practices; factors that determine the extent of employee growth and development on the job.

One of the first formal definitions of organizational climate was provided by Forehand and Gilmer (1964). They defined organizational climate as a set of characteristics that (a) distinguishes among organizations, (b) endures over time, and (c) influences employee behavior. Climate is hypothesized to influence individual behavior by defining the stimulus field, constraining freedom, and rewarding or punishing specific behaviors.

Tagiuri (1968a) and Pritchard and Karasick (1973) extended and refined previous attempts to define the concept of organizational climate. Their description, with slight modification, is indicated below.

Organizational climate is--

1. an enduring quality of an organization's internal environment, distinguishing it from other organizations;
2. a consequence of the behavior, policies, and practices of the organization's members, primarily its management;
3. perceived and experienced with significant agreement by the members of the organization;
4. a basis for interpreting the situation; and
5. a source of pressure for directing or controlling behavior.

Campbell and Beaty¹ described organizational climate as resulting from perceptual filtering, summation, interpretation, and structuring of organizational experiences. These experiences are usually derived from managerial or

¹J. P. Campbell and E. E. Beaty. Organizational climate: Its measurement and relationship to workgroup performance. Paper presented at the meeting of the American Psychological Association, Washington, D.C., Sep 1971.

TABLE 1. EXAMPLES OF THE EVOLUTION OF MODELS OF ORGANIZATIONAL BEHAVIOR

Example	Criteria	Predictor Variables	
		Type	Principal Components ^a
Lewin (1951)	Behavior (generic)	Person Environment	
Maier (1955)	Performance	Individual	Ability Training Motivation Fatigue
Porter (1961, 1962, 1963a, 1963b, 1963c)	Need Satisfaction	Individual	Need strength Need importance Need fulfillment opportunity
Vroom (1964) ^b	Motivation Performance Job Satisfaction	Individual	Ability Traits Reward valence Reward equity Role perceptions Reward expectancy Reward instrumentality
Indik (1968) Secrist (Doctoral research, Univ. of Utah, 1969; Briefing/technical presentation, Personnel Div, USAF Human Resources Lab, Lackland AFB, Tex., 1973) Secrist and Longridge (Briefing/technical presentation/proposal, USAF School of Applied Aerospace Sciences, Sheppard AFB, Tex., June 1975)	Performance Job satisfaction	Individual	Life history Personality Ability/Aptitude Motivation Interests Training Group Training Group process and function Teamwork Work-group cohesiveness Personal closeness Homogeneity Structure Function and process Leader behavior
		Sociological	
		Organizational	
		Individual	
		Sociological	
		Organizational	

James & Jones (1974) Pay & Pugh (1976)	Physical environment	Preferences Quality Resource availability Natural environment Requirements Job aids
	Job and Task	
Performance Motivation Job Satisfaction	Individual	Intelligence Abilities Personality Socioeconomic status Motivation Attitudes Context Structure Norms Values Process Group context Group structure Group norms Group values Group process External Organizational Group Individual (perceived) External
	Organizational	
Hackman & Oldham (1975, 1976) Umstot et al. (1978)	Sociological	
	Physical environment	
Motivation Performance Job Satisfaction	Sociocultural	
	Psychological states	Meaningfulness of work Responsibility Knowledge of results

^aMost principal components are multidimensional. The evolution of organizational models has brought more comprehensive and precise identification and measurement of important dimensions of the major predictor-variable components.

^bExpansion and refinement of Vroom's seminal work can be found in Galbraith & Cummings 1967, Mitchell & Nebeker 1973, Porter & Lawler 1968, and Wofford 1971.

TABLE 1 (Continued)

Example	Criteria	Predictor Variables	
		Type	Principal Components ^a
		Job and task	Skill variety Task identity Task significance Challenge Difficulty
		Organizational	Autonomy Feedback Structure Technology Organizational climate

Christ (Scientific excellence through enlightened management and healthy organization environments. Book submitted for publication, 1982)

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^aNew model presented in detail later in this report.

organizational practices and processes that seem to be shaped by the combined influence of organizational size, technological complexity, policies, structure, outside political/cultural context, and value norms. James et al. (1978) defined the process of climate formation as the development of cognitive representations of relatively proximal situational conditions in a way that yields psychologically meaningful or useful interpretations.

In essence, then, organizational climate is a multidimensional macro concept that consists of the general perceptions people have about their work environment. These perceptions are accumulated and integrated over time and are based on actual or inferred events, activities, practices, procedures, and other situations or conditions existing within organizations (James et al. 1978, Schneider 1975). Organizational climate is a shared perception; that is, people within the same environment often show remarkably similar perceptions of the essential characteristics of the existing climate (Herman et al. 1975, Newman 1975, Schneider 1975). Although individual perceptions are vulnerable to a number of biases and distortions, the perceptions of individuals subjected to a common organizational environment still show substantial congruence.

Organizational climate, from the perspectives explicated above, constitutes a powerful relationship that results from interaction between the individual and the organizational situation, and that directly influences dependent or criterion variables such as performance, satisfaction, effectiveness, and morale. Of particular importance is the predominant influence of organizational climate in enhancing or depressing the relationship between individual abilities and performance. Schneider (1975) has stressed that an unsupportive, overstructured, rigid organizational environment that suppresses individual differences has the greatest impact on the most able individuals because of their range of talents and capabilities. As a consequence, this great range of ability is compressed into a narrow band of behaviors that are acceptable within the organization. Conversely, when the situation is less restrictive and structured, human potential and talent are unleashed. An organizational climate is most effective when it demands and sustains personal characteristics that enhance organizational effectiveness and the realization of human potential (e.g., achievement, excellence, initiative, responsibility, interpersonal ethics, global rather than parochial orientation, intelligence, creativity, and integrity).

To summarize and evaluate the empirical evidence regarding the impact of organizational climate on human performance and organizational effectiveness is not the purpose here. However, a comprehensive review and assessment of research in this area has recently been compiled (Secrist²).

DIMENSIONS OF ORGANIZATIONAL CLIMATE

Research findings regarding the dimensionality of organizational climate in various work settings show remarkable similarity. A general taxonomy of

²G. E. Secrist. Scientific excellence through enlightened management and healthy organizational environments. Book submitted for publication, 1982.

organizational climate was derived from an analysis of relevant scientific literature (e.g., Ellison et al. 1968, Goodman 1968, House and Rizzo 1972, James and Jones 1980, Jones and James 1979, Kahn et al. 1964, Katz and Kahn 1966, LaFollette and Sims 1975, Litwin and Stringer 1968, McDonald 1970, Meyer 1968, Olmstead and Christensen 1974, Pace 1968, Payne and Pheysey 1971, Payne et al. 1971, Pelz and Andrews 1966, Secrist 1975, Schneider and Bartlett 1968, Sells 1968, Tagiuri 1968b). The resultant eight-category taxonomy of organizational climate is presented in Table 2. The dimension categories were further evaluated by having a group of independent judges use the taxonomy to classify variables found in a sample of organizational research studies (Secrist et al. 1983). These categories appear to represent highly visible, potent manifestations of an organization's behavior as perceived by its members.

TABLE 2. TAXONOMY OF ORGANIZATIONAL-CLIMATE DIMENSIONS

Dimension	Title	Description
I	Leader or Supervisor Competence	Two major aspects of leader or supervisory competence: (a) task competence--level of knowledge and competence in performing the primary job/task functions of the work group, and (b) personal-relations competence--extent of interpersonal-relations knowledge and skill in providing a fair, supportive, and harmonious work environment.
II	Organization versus Individual Control	Extent to which behavior is controlled by the organization vis-a-vis the individual: degree of organizational control, structure, or stringency of policies, rules, and regulations vis-a-vis self-control, flexibility, independence, or autonomy.
III	Organizational Stress	Quantity and type of stress induced by the organization, including role conflict, role ambiguity, interpersonal friction, management pressure, and other sources of dysfunctional stress within the work environment.
IV	Quality of Interpersonal Relations	Quality and supportiveness of relations among peers, subordinates, superiors, work groups, interfacing subunits, and organizations; degree of work-group or team cohesiveness and solidarity.
V	Standards and Goals	Degree of challenge of job goals, objectives, and work assignments; level of difficulty and clarity of goals, standards, and job/task functions.

TABLE 2. (Continued)

Dimension	Title	Description
VI	Communications Effectiveness	Extent to which organizational and interpersonal communications are accurate, undistorted, unbiased, and complete; degree to which open, honest, easy two-way information exchange exists between organization members and the leadership or management.
VII	Organizational Incentive and Reward System	Quality, quantity, and equity of rewards or incentives; also, extent to which rewards are <u>contingent</u> on level of performance and contribution to the organization.
VIII	Physical Environment	Quality, adequacy, and supportiveness of the immediate physical work space and facilities, including extent to which the physical-architectural work space conforms to individual preferences and to which the individual is free to modify or adapt the immediate physical-architectural work space to suit personal characteristics and job requirements.

ADVANCED MODELS OF ORGANIZATIONAL BEHAVIOR

The popular view of organizational climate as a multidimensional, macro concept based on the perceptual filtering, structuring, and description of numerous situational stimuli (e.g., Campbell and Beaty¹, James and Jones 1974, James et al. 1978, Schneider 1975) requires identification and precise measurement of both the crucial climate dimensions and the salient precursors of climate. A major problem in assessment is that organizational climate is often confounded with its precursors (e.g., organizational structure and management practices). One principal distinction is whether the measurement approach involves employee perceptions (climate) or objective assessment of organizational static (structure) or dynamic (practices) variables. Although perceptions are considered the critical determinant of individual behavior (James and Jones 1980), these perceptions must be linked to specific objective stimuli if environmental conditions are to be improved; i.e., it is essential to determine the organizational policies, structures, processes, and practices that influence and shape climate. Some of these shaping factors will be addressed next.

Leader behavior, specifically management practices, seems to have a particularly strong influence on organizational climate. Management practices refer to the manner in which organizational policy is implemented and reflect the values and behavioral norms of the organization.

Although compelling empirical evidence is sparse, organizational structure is thought to be one of the major factors from which management practices and processes emanate, and thus to be a remote precursor of organizational climate. Structure, in essence, is the objective distribution of units and

positions within an organization and their systematic, objective (not perceived) relationship to each other (James and Jones 1976). The development of structure appears to be related to the organization's size, technological complexity, policies, and evolving value norms.

Several investigations have been undertaken to identify important dimensions of organizational structure (Dunteman 1966, Hall et al. 1967, Inkson et al. 1970, James and Jones 1976, Payne and Pugh 1976, Prien and Ronan 1971, Pugh et al. 1968, Reimann and Inzerilli³). From these efforts, at least six dimensions appear to be of potential importance as influencers of organizational practices and processes: specialization, standardization, formalization, centralization, configuration, and interdependence. (See Table 3.) These structural dimensions can be combined with antecedent factors such as organizational size, technological complexity, policies, and value norms to provide a frame of reference for studying organizational climate.

TABLE 3. SOME COMMON DIMENSIONS OF OBJECTIVE ORGANIZATIONAL STRUCTURE

Dimension ^a	Description
Specialization	Division of labor according to functional specialization, mechanization, and task specialization.
Standardization	Degree to which methods are highly structured, procedures standardized, and behavior governed by regulation.
Formalization	Extent to which relationships are officially formalized, status and prestige specified, and roles formally defined.
Centralization	Degree to which decision making is centralized and authority concentrated within the various organizational positions.
Configuration	Organizational shape (tall or flat), structure of positions, hierarchical level, and relationships among positions.
Interdependence	Degree of function or task interdependence or autonomy with regard to intraorganizational subunits.

^aModified from James & Jones 1976, Payne & Pugh 1976, and Pugh et al. 1968.

³B. C. Reimann and G. Inzerilli: Technology and organization. A review and synthesis of major research findings. Unpublished manuscript, July 1978.

In summary, it is hypothesized that organizational size, technology, and structure comprise interrelated precursors that combine with organizational value norms, policies, and high-level leadership behaviors to shape management practices. In turn, these management practices interact with individual variables (e.g., intelligence, aptitudes, motivation, values, attitudes, life history experiences) to produce the organizational climate. Such is the highly complicated, interactive, multivariate reality in which organizational behavior occurs.

Comprehensive models of individual and organizational effectiveness are needed to define and classify relevant variables, illustrate direction and magnitude of relationships, and specify cause and effect. Although refined, definitive models require more integrative, multivariate conceptual and empirical work than completed to date, some formative contributions have been made.

A brief chronological review of model development efforts was presented in the Concept of Organizational Climate section. Several milestone models will be highlighted here to illustrate the emergence of models approximating real-world complexity. Then, a total spectrum model of human and organizational effectiveness will be presented which depicts human organizational behavior within three interactive layers of environmental factors.

An early systems model of organizational behavior, which encompassed the total organization within the context of the external environment, was proposed by Evan (1968). He expanded role-set theory to include outside environmental factors interacting with the organization as well as variables within the organization responsible for generating internal climate. Evan also recommended that experimentation be conducted on the value climate, interpersonal climate, and task climate.

Another relatively sophisticated model of organizational climate has been advanced by Indik (1968). He developed a taxonomy of organizational behavior which classified structure, function, and process variables at the individual, group, and organizational levels. Indik's taxonomy identified an extensive list of variables for each category. His systematic framework was a valuable contribution as a paradigm of organizational complexity and also as a foundation for a compendium of needed measures and their corresponding developmental histories.

James and Jones' (1974) research and review of the organizational climate literature caused them to partition the components of situational variance within an organization into five parts: (a) context variables (e.g., goals and objectives, resources, function, task/role requirements, level of technology); (b) structure variables (e.g., size, centralization of decision making, configuration, specialization, standardization, formalization); (c) process variables (e.g., leader behavior, management practices, communications, control, coordination, socialization, reward); (d) physical environment variables (e.g., physical space characteristics, hazards, environmental stresses, confinement); and (e) systems values and norms (e.g., conformity, rationality, loyalty, reciprocity). More recently, James and Jones (1980) have developed a nonrecursive model of organizational behavior which integrates much of their

previous work. The nonrecursive model focuses on organizational and individual antecedents of job perceptions and job satisfaction to explain the dynamic reciprocal relationship between organizational climate and individual satisfaction.

Using James and Jones' (1974) taxonomy of situational variance, the context, structure, management practices, physical environment, and system values and norms can be viewed as organizational precursor variables that combine with individual causal variables such as ability, motivation, and personality to produce outcome or criterion variance (performance, satisfaction, and fulfillment of potential) through the intervening concept of organizational climate. The need to incorporate intervening variables, as reflected by the concept of organizational climate, is underscored as essential to ascertaining and understanding the relationship between organizational characteristics and individual attitudes and behaviors (James and Jones 1976, Payne and Pugh 1976).

In summary, the salient driving factors that underlie organizational elaboration and management practices and the more proximal causal variables encompassed by the concept of organizational climate appear to be organizational size, technological complexity, structure, policy, and value norms. Size results from attempts to control the environment by adding new functions and substructure as the organization grows and expands (James and Jones 1976). Both size and technological complexity bring about greater elaboration of function and structure and, as a consequence, increased specialization, formalization, and additional subsystems for coordination, control, and regulation (Blau 1970, Gouldner 1954, James and Jones 1976, Katz and Kahn 1966, Payne and Pugh 1976). Organizational policy articulates and documents organizational processes, and value norms establish the ethical framework and moral anchors for human interaction within the organization⁴.

TOTAL SPECTRUM MODEL

A multidimensional theoretical-conceptual model, termed the total spectrum model of human and organizational effectiveness, is portrayed in Figure 1. This model integrates and extends relevant previous work in an effort to span the total spectrum of organizational complexity including individual, organizational, environmental, and criterion components.

The total spectrum model evolved from formative work begun nearly 15 years ago (Secrist, doctoral research) to develop a total-environment (psychological, organizational, and environmental) research approach to complex job performance and satisfaction (Secrist 1975). This work resulted in a prototype total environment or total spectrum model first presented in the early

⁴H. W. Hendrick. Abstractness, conceptual systems and the functioning of complex organizations. Unpublished manuscript, University of Southern California, 1979.

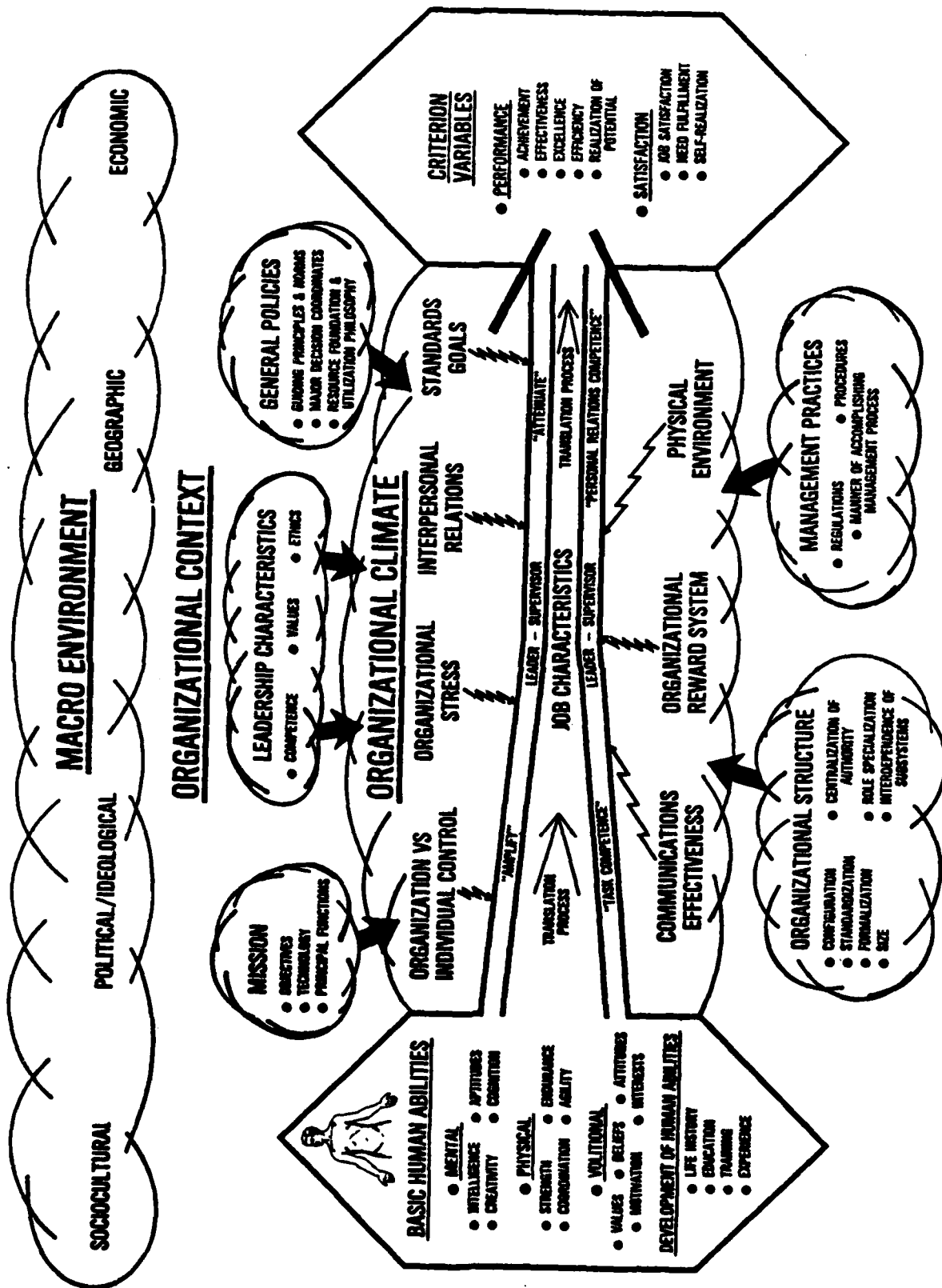


Figure 1. The Secrist total spectrum model of human and organizational effectiveness.

1970s^{5,6}. The total spectrum model depicted in Figure 1 was developed from this early foundation and influenced by the organizational modeling efforts of others, especially Evan 1968, Hinton 1968, Indik 1968, James and Jones 1974, Payne and Pugh 1976, and Pugh et al. 1968.

This total spectrum model views job performance and satisfaction as a translation process in which individual talents and abilities are applied to specific job tasks to produce a resultant level of performance, achievement, and excellence. The basic human abilities--as modified by life history, education, training, and job-related experience--are focused and applied to job tasks at a level of intensity and tenacity determined by the individual's volitional structure (values, beliefs, attitudes, motivation, and interests). The extent to which potential and progress toward self-actualization are realized is postulated to determine the degree of individual satisfaction and fulfillment.

The entire translation process takes place within three principal layers of environment. The macro environment--the most remote and generic environment for the individual job situation--provides the overall sociocultural, political-ideological, geographic-climatologic, and economic envelope. The second layer of environment concerns the overall organizational context within which ability is translated into performance. The organizational context comprises a unique set of factors that give each organization its identifying characteristics: (a) mission/function properties and technology level; (b) leadership behavior, values, and ethics; (c) general guiding policies, principles, and norms, including major decision coordinates; (d) resource (human, material, and financial) availability, characteristics, and utilization philosophy; (e) organizational structure (size, configuration, standardization, formalization, centralization of authority, role specialization, interdependence of subsystems); and (f) management practices, including regulations, procedures, and manner of executing the management process.

The combined, interactive effects of the organizational-context factors create the environmental layer most proximal to the workers--the organizational climate. The organizational-climate dimensions (Table 2) affect the translation of ability to performance and can either enhance or hinder effectiveness and realization of potential. An organization's climate can create overwhelming barriers to the translation process or assist and augment the translation of human talent and ability into excellence, superior achievement, and full realization of potential.

Finally, the total spectrum model portrays the immediate supervisor or work group leader as an amplifier-attenuator mechanism; an umbrella that acts as a buffer between the work-group members and the organizational climate.

⁵G. E. Secrist. Organizational research and organizational development. (Briefing/technical presentation) Personnel Research Division, U.S. Air Force Human Resources Laboratory, Lackland AFB, Tex., Sep 1973.

⁶G. E. Secrist and T. M. Longridge. New training research program. (Briefing/technical presentation/proposal) U.S. Air Force School of Applied Aerospace Sciences, Sheppard AFB, Tex., June 1975.

The competence and managerial expertise of the immediate supervision can be a potent force in magnifying the positive features of climate and filtering or shunting its negative aspects from the individual and his translation process.

The total spectrum model of human and organizational effectiveness appears to be more comprehensive and finely tuned than earlier models of organizational behavior. Research regarding the various dimensions identified in the model was recently reviewed and evaluated². This effort indicated that the total spectrum model is a useful theoretical-conceptual framework for guiding and interpreting organizational research and for developing new organizational assessment tools. Yet much work remains to be done. Although the total spectrum model identifies major components of organizational behavior, specifies dimensions, and postulates the relationships and importance of variables, more comprehensive and intensive research is required to understand the exact nature of causality.

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